

Taxonomic Notes on the Genera *Chelostoma* and *Ashmeadiella* (Hymenoptera, Megachilidae).

By CHARLES D. MICHENER, University of California,
Berkeley, California.

Since but four species of the genus *Chelostoma* are known from the Western Hemisphere, all occurring along the Pacific Coast of the United States, the discovery of a fifth species in northern California is of considerable interest. In addition several facts affecting the nomenclature and known distribution of various species of *Ashmeadiella* have come to light since the publication of a revision of the genus (Michener, 1939, Amer. Midl. Nat., 22: 1-84). These are recorded in the following pages.

Chelostoma tetramerum n. sp.

This is a moderate sized, slender, black species.

♂ : Length 6.5 mm. Pubescence sparse, whitish, not forming transverse bands on abdominal terga. Punctuation of body fine and rather even, that of mesoscutum as coarse as that of vertex; horizontal area of propodeum finely rugose, shorter than metanotum. Proboscis not greatly elongate, glossa as long as face; first segment of labial palpi about one-third as long as second; maxillary palpi four-segmented, first segment short and globular, second longest, third but little shorter than second, and fourth markedly shorter than third. Wings dusky, veins and stigma black; second abscissa of cubital vein shorter than fourth. Posterior margins of abdominal terga one to six narrowly brownish; seventh tergum ending in three processes, the median, which is triangular and about as long as basal width, directed more ventrally than the incurved laterals which are about one and one-half times as long as their basal widths; seventh tergum with large, median, dorsal, longitudinally elongate depression; second sternum with transverse elevated area; parameres pointed but not attenuate apically; coxopodites of genitalia slender and straight, slightly enlarged apically, with a few rather long hairs near apices.

Holotype male (Ent. No. 5216, Calif. Acad. Sci.): Shingletown, Shasta County, CALIFORNIA, May 23, 1941, flying over nearly bare ground (C. D. Michener). *Paratype* (author's collection), same data but on a small, yellow-flowered species of *Mimulus*.

This species resembles *C. phaceliae* Michener in the four-segmented maxillary palpi but differs from that form in the much shorter proboscis, proportions of the segments of the labial palpi, absence of the abdominal hair bands, shorter processes of the seventh tergum with the median one directed more downward than the lateral ones, more enlarged apices of the coxopodites of the male genitalia, and simple rather than attenuated apices of the parameres similar to those illustrated (Pan-Pac. Ent., 14: 36-45, 1938) for *minutum*. This species is also larger than most specimens of *phaceliae*, although certain individuals of that species from Mt. Diablo, California, are 6.5 mm. long. In its large size *tetramcrum* approaches *C. californicum* Cresson, differing by the longer processes of the seventh abdominal tergum, the absence of pubescent fasciae on the terga, the relatively straight rather than downcurved parameres and coxopodites of the male genitalia, and the four-segmented maxillary palpi. From *C. bernardinum* Michener, the other American species with three processes on the seventh abdominal tergum of the male, *C. tetramcrum* may be distinguished by the shorter processes of the seventh tergum, the more coarsely punctate mesoscutum, and the four-segmented maxillary palpi.

ASHMEADIELLA.

The late Grace A. Sandhouse wrote to me stating that the three original type specimens of *Ashmeadiella cactorum* (Cockerell) are in the National Museum, bearing Cockerell's label, "*H. cactorum* n. sp.", and that they belong to the form previously regarded as *A. curriei* Titus. My identification of *cactorum* was based upon specimens determined by Cockerell subsequent to the time the species was described. Unfortunately it is from the three cotypes that a lectotype of *cactorum* must be selected; that bearing Cockerell's number 3449 is here designated as lectotype. The name *cactorum* therefore replaces *curriei*, and for the species which I have previously regarded as *cactorum* the name *meliloti* Cockerell is available. The following synonymies indicate the nomenclatorial changes resulting from the correction of the use of the name *cactorum*.

For the sake of brevity only the key citations are here indicated; others may be found in the revisional paper already referred to.

ASHMEADIELLA (ASHMEADIELLA) MELILOTI MELILOTI (Cockerell). *Heriades meliloti* Cockerell, 1897, Ann. Mag. Nat. Hist., (6) 20: 141, ♂ ♀. *Ashmeadiella meliloti*, Cockerell, 1898, Bull. Denison Univ., 11: 64, ♂. *Ashmeadiella cactorum cactorum*, Michener (misidentification), 1936, Amer. Mus. Nov., 875: 8, ♀ ♂. *Ashmeadiella (Ashmeadiella) cactorum cactorum*, Michener, 1939, Amer. Midl. Nat., 22:42, ♀ ♂.

A. (A.) MELILOTI ASTRAGALI Michener. *Ashmeadiella (Ashmeadiella) cactorum astragali* Michener, 1939, Amer. Midl. Nat., 22: 44, ♀ ♂.

A. (A.) MELILOTI CRASSA Cockerell. *Ashmeadiella crassa* Cockerell, 1924, Proc. Calif. Acad. Sci., (4) 12: 558, ♀ (part). *Ashmeadiella (Ashmeadiella) cactorum crassa*, Michener, 1939, Amer. Midl. Nat., 22: 44, ♀.

A. (A.) MELILOTI ARIDULA Cockerell. *Ashmeadiella aridula* Cockerell, 1910, Entom., 43: 91, ♂. *Ashmeadiella cactorum aridula*, Michener, 1936, Amer. Mus. Nov., 875: 9, ♂ ♀. *Ashmeadiella (Ashmeadiella) cactorum aridula*, Michener, 1939, Amer. Midl. Nat., 22: 44, ♀ ♂.

A. (A.) CACTORUM CACTORUM Cockerell. *Heriades cactorum* Cockerell, 1897, Ann. Mag. Nat. Hist., (6) 20: 140, ♀. *Ashmeadiella cactorum*, Cockerell, 1898, Bull. Denison Univ., 11: 64, ♀. *Ashmeadiella curriei* Titus, 1904, Proc. Ent. Soc. Wash., 6: 100, ♀ (new synonym). *Ashmeadiella (Ashmeadiella) curriei curriei*, Michener, 1939, Amer. Midl. Nat., 22: 15, ♀ ♂. *Ashmeadiella basalis nigra* Michener, 1936, Amer. Mus. Nov., 875: 7, ♀ ♂. *Heriades prosopidis* Cockerell, 1897, Ann. Mag. Nat. Hist., (6) 20: 140, ♂, nec ♀.

A. (A.) CACTORUM ECHINOCEREI Cockerell. *Ashmeadiella echinocerei* Cockerell, 1911, Can. Ent., 43: 132, ♀. *Ashmeadiella (Ashmeadiella) curriei echinocerei*, Michener, 1939, Amer. Midl. Nat., 22:16, ♀.

A. (A.) CACTORUM BASALIS (Michener). *Ashmeadiella basalis basalis* Michener, 1936, Amer. Mus. Nov., 875: 6, ♂ ♀. *Ashmeadiella (Ashmeadiella) curriei basalis*, Michener, 1939, Amer. Midl. Nat., 22:17, ♀ ♂.

Additional localities for this subspecies are: Santa Rosa Mountain, Riverside County, California, 6000 to 7500 feet elevation, May 31, June 8 and 16, 1940, on *Lotus davidsonii* (C. D. Michener) and Westgard Pass, Inyo County, Cali-

fornia, May 26, 1937 (N. W. Frazier). The latter specimens are of interest since they, like the specimens from the Clark Mountains recorded in 1939, are from a desert mountain range in which this ordinarily cismontane subspecies would not be expected.

A. (A.) OCCIPITALIS Michener. This species was collected ten miles south of Tucson, Arizona, August 7, 1940, on *Verbesina exauriculata*, also taken at several localities in Cochise County, Arizona, on the same flower (C. D. Michener).

ASHMEADIELLA (AROGCHILA) FOXIELLA Michener. *Ashmeadiella (Arogochila) foxiella* Michener, 1939, Amer. Midl. Nat., 22: 73, ♂. *Ashmeadiella (Chilosima) washingtonensis* Michener, 1939, Amer. Midl. Nat., 22: 80, ♀. (new synonym).

The female described as *A. washingtonensis* was placed in the subgenus *Chilosima* with considerable doubt, but its relationship with a male *Arogochila* was not suspected. The two sexes, however, were collected together by the author at Hat Creek, Shasta County, California, on June 4, 1941, visiting the slender whitish flowers of a species of *Pentstemon*. Although the female is a peculiar form not closely related to any other species and possibly worthy of separation as a distinct subgenus, the similarity of the male to that of *Arogochila* leads to the belief that this species, like *A. barberi* Michener, the female of which also has quadridentate mandibles, is a derivative of *Arogochila*.

In the key to the females of *Arogochila* this species runs to 2 and is separated from *A. sculleni* Michener and *A. barberi* Michener by the absence of the lateral lobes of the clypeus. One of the males from Hat Creek, unlike other specimens studied, has the median teeth of the sixth abdominal tergum twice as long as broad.

A. (A.) TIMBERLAKEI TIMBERLAKEI Michener. This form was collected on Santa Rosa Mountain, Riverside County, California, 6000 to 7500 feet elevation, on *Lotus davidsonii*, May 31, June 15 and 18, 1940 (C. D. Michener); five miles east of Burney, Shasta County, California, on *Phacelia*, June

8, 1941 (C. D. Michener). In one female from the latter locality the median lobe of the clypeus is unusually broad and rounded and but feebly notched at the apex.

A. (A.) *SALVIAE* Michener. Although previously known only from southern California, a specimen of *A. salviae* was taken at Mount Diablo, Contra Costa County, California, June, 1939.

ASHMEADIELLA (CHILOSIMA) RHODOGNATHA Cockerell. Among numerous typical individuals of this species from El Mayor, Lower California, Mexico, April 3, 1940, on *Prosopis chilensis* (C. D. Michener) is a single female in which the legs are red and the posterior margins of the abdominal terga broadly red. This may indicate that *A. rhodognatha* is a black subspecies of the New Mexican *A. holtii* Cockerell.

ASHMEADIELLA (CUBITOGNATHA) XENOMASTAX Michener. Mr. P. H. Timberlake has very kindly allowed me to study a male and female of this species which he collected three miles southwest of Victorville, California, on *Dalea saundersii*, May 12, 1939. The male of this subgenus, which has not previously been described, runs to *Ashmeadiella* s. str. and *Titusella* in my key to subgenera, and differs from most of the species included in those groups by the somewhat emarginate apex of the labrum. The male is described as follows:

Length 6 mm. Anterior margins of eyes divergent below; face densely covered with white pubescence largely obscuring surface; clypeus finely and densely punctate, its apical margin with broad, shallow emargination; frons and vertex a little more coarsely punctate than clypeus but densely so; anterior ocellus but little posterior to midpoint between antennal bases and posterior margin of vertex; posterior ocelli separated by a distance equal to that to nearest eye margin and hardly less than distance to posterior edge of vertex; flagellum reddish brown beneath; mandibles bidentate, red except bases and apices; labrum elongate, apex with broad, shallow emargination. Punctures of scutum and scutellum and mesepisternum coarser and less dense than those of vertex; all tarsi reddish; posterior legs red beyond trochanters except for black posterior surfaces of tibiae. Abdomen red except for black basal mid-dorsal spots on terga, spot of fourth tergum largest, spots of preceding and following terga diminishing in size; sixth tergum with lateral margins slightly sinuate, lateral teeth not broad, but short and rounded apically, median teeth much broader than long, irregularly rounded and separated by an emargination much broader than a semicircle.